AI-Based Modeling: Techniques, Applications and Research Issues Towards Automation, Intelligent and Smart Systems

Year: 2022 | Citations: 736 | Authors: Iqbal H. Sarker

Abstract

Artificial intelligence (AI) is a leading technology of the current age of the Fourth Industrial Revolution (Industry 4.0 or 4IR), with the capability of incorporating human behavior and intelligence into machines or systems. Thus, AI-based modeling is the key to build automated, intelligent, and smart systems according to today's needs. To solve real-world issues, various types of AI such as analytical, functional, interactive, textual, and visual AI can be applied to enhance the intelligence and capabilities of an application. However, developing an effective AI model is a challenging task due to the dynamic nature and variation in real-world problems and data. In this paper, we present a comprehensive view on "AI-based Modeling" with the principles and capabilities of potential AI techniques that can play an important role in developing intelligent and smart systems in various real-world application areas including business, finance, healthcare, agriculture, smart cities, cybersecurity and many more. We also emphasize and highlight the research issues within the scope of our study. Overall, the goal of this paper is to provide a broad overview of AI-based modeling that can be used as a reference guide by academics and industry people as well as decision-makers in various real-world scenarios and application domains.